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RAPESEED MEAL: AN AGRO-WASTE FOR CHEAP/LOW COST LACCASE PRODUCTION

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Abstract

Rapeseed meal (RM) is an abundant and cheap by-product of oil extraction process. RM is a rich source of nitrogen, carbon, and minerals. Thanks to these features, RM has a striking potential for eco-friendly production of high value products in biotechnological processes.

In this study, the possibility of using a low-cost medium based on the water soluble fraction of RM for laccase production by the fungus *Pleurotus ostreatus* has been evaluated and compared with the use of synthetic complex media. RM-based medium (RMM) led to extracellular laccase production comparable to that obtained in the presence of synthetic media. Moreover, the use of a raw material highly reduced the production costs. To further reduce cost and improve activity production the effect of the addition of nitrogen source, pure aromatic compounds and lignosulphonate, a low cost by-product of wood based industries, was evaluated. The optimized medium led to a laccase production level of more than 100,000 U/L at a cost of about $0.19 \cdot 10^{-3}$ cent€/U. The obtained results demonstrate the effective recycle of a waste to produce an industrially relevant enzyme.

Key words: fermentation, laccase production, rapeseed meal

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